CLAIMS

Inventor , Launeil Neil Sanders, claim:

1. A raw influent treatment process eliminating secondary biological treatment comprising:

   a) adding to raw influent a commercially available alum solution ;

   b) adding to raw influent a commercially available alum solution with addition being continuously controlled by continuous in-line pH controller to pH of 5.7 to 6.0 ;

   c) adding to raw influent from about 0.25 to 3.0 parts per million of a nonionic , cationic or anionic commercial polyelectrolyte polymer to increase settling rate , agglomeration , and effectiveness of sedimentation and increase Color , Chemical Oxygen Demand , and Total Organic Carbon removal efficiencies producing a supernatant liquid layer from which the color bodies and 95% oforganics are removed ;

   d) monitoring and controlling the Color , Chemical Oxygen Demand , and Total Organic Carbon removal efficiencies across the primaryclarifier(s) by insertion of Continuous in-line Chemical Oxygen Demand Analyzer at outlet of primaryclarifier(s) ;

   e) separating the supernatant liquid layer from which the color bodies andorganics have been removed ; f) removing the sludge from primaryclarifier(s) underflow , dewatering the sludge , incineration in existing bark power boilers or other incineration , regeneration and the recycle of a portion of recovered chemicals , and wasting of sludge up to approximately 20% to 35% depending on content of inert boiler ash in raw influent which consists of adding cationic , anionic or non-ionic polymers indewatering;

   g) that supernatant liquid layer passes on to other final polishing /pH adjustment , if needed , and since Chemical Oxygen Demand , Total Organic Carbon , and Color removal efficiencies are exceedingly high , greater than 95% , no biological treatment is required and secondary biological treatment is eliminated;

2. A raw influent treatment process eliminating secondary biological treatment according to claim 1 comprising:

   a) adding to raw influent a commercial aluminum chloride liquid solution ;

   b) adding to raw influent a commercial aluminum chloride liquid solution with addition being continuously controlled by continuous in-line pH controller to a pH of 5.7 to 6.0 ;

3. A raw influent treatment process eliminating secondary biological treatment according to claim 1 comprising:

   a) adding to raw influent a commercial ferric chloride liquid solution ;

   b) adding to raw influent a commercial ferric chloride liquid solution with addition being continuously controlled by continuous in-line pH controller to a pH of 5.7 to 6.0 ;

4. A raw influent treatment process eliminating secondary biological treatment according to claim 1 comprising:

a) adding to raw influent a commercial ferrous sulfate solution ;

b) adding to raw influent a commercial ferrous sulfate solution with addition being continuously controlled by continuous in-line pH controller to a pH of 5.7 to 6.0 ;

5. A raw influent treatment process eliminating secondary biological treatment according to claim 1 comprising:

a) adding to raw influent a commercial ferrous sulfate solution and sulfuric acid ; b) adding to raw influent a commercial ferrous sulfate solution and sulfuric acid with addition being continuously controlled by continuous in-line pH controller to a pH of 5.7 to 6.0 ;

6. A raw influent treatment process eliminating secondary biological treatment according to claim 1 comprising:

a) adding to raw influent the desired reagent chemicals to the desired pH of 5.7 to 6.0 delivers a primary clarifier(s) effluent with 40 to 65 milligrams per liter of Chemical Oxygen Demand , 40 to 65 milligrams per liter of Total Organic Carbon , and 100 to 250 milligrams per liter of Color respectively.

b) that in other old art it was noted that conventional biological treatment was required whereas in this invention no secondary treatment is required and directly results in approximately 100% elimination of aerators' horsepower and maintenance which results in economic electrical energy savings to the Pulp and Paper industry .

7. A raw influent treatment process eliminating secondary biological treatment which comprises contacting raw influent containing lignins , lignin degradation productshumic acids , sulphates(ites) attached to ring structures , cellulose fibers , cooking chemicals and like from pulping , lime kiln , bleach plants including chlorine ,hypochlorite , caustic extraction , chlorine dioxide stages groundwood pulping , thermomechanical pulping amd all like in combined raw influent sewer :

a) adding to raw influent the barium chloride and mixture of hydrochloric acid reagent chemicals to the desired pH of 5.7 to 6.0 ;

b) adding to combined raw influent the barium chloride and hydrochloric acid reagents with addition being continuously controlled by continuous in-line pH controller to a pH of 5.7 to 6.0 ;

c) adding to raw influent from about 0.25 to 3.0 parts per million of a nonionic , cationic or anionic commercial polyelectrolyte polymer to increase settling rate , agglomeration , and effectiveness of sedimentation and increase Color , Chemical Oxygen Demand , and Total Organic Carbon removal efficiencies producing a supernatant liquid layer from which the color bodies and 95% ofrganics are removed ;

d) monitoring and controlling the Color , Chemical Oxygen Demand , and Total Organic Carbon

removal efficiencies across the primaryclarifier(s) by insertion of Continuous on-line Chemical Oxygen Demand Analyzer at outlet of primaryclarifier(s) ;

e) separating the supernatant liquid layer from which the color bodies andorganics have been removed ; f) removing the sludge from primaryclarifier(s) underflow , dewatering the sludge , incineration in existing bark power boilers or other incineration , regeneration and the recycle of a portion of recovered chemicals , and wasting of sludge up to approximately 20% to 35% depending on content of inert boiler ash in raw influent which consists of adding cationic , anionic or non-ionic polymers indewatering ;

g) that supernatant liquid layer passes on to other final polishing and since Chemical Oxygen Demand , Total Organic Carbon , and Color removal efficiencies are exceedingly high , greater than 95% , no biological treatment is required and secondary biological treatment is eliminated ;

8. A raw influent treatment process eliminating secondary biological treatment which comprises contacting raw influent containing lignins , lignin degradation productshumic acids , sulphates(ites) attached to ring structures , cellulose fibers , cooking chemicals and like from pulping , lime kiln , bleach plants including chlorine ,hypochlorite , caustic extraction , chlorine dioxide stages groundwood pulping ,thermomechanical pulping amd all like in combined raw influent sewer :

a) adding to raw influent the barium sulfide liquid , borax , sodium silicate liquid mixture reagent chemicals to the desired pH of 5.5 to 6.0 ;

b) adding to combined raw influent the barium sulfide liquid , borax , sodium silicate liquid mixture reagent chemicals with addition being continuously controlled by continuous in-line pH controller to a pH of 5.5 to 6.0 ;

c) adding to raw influent from about 0.25 to 3.0 parts per million of a nonionic , cationic or anionic commercial polyelectrolyte polymer to increase settling rate , agglomeration , and effectiveness of sedimentation and increase color , Chemical Oxygen Demand , and Total Organic Carbon removal efficiencies producing a supernatant liquid layer from which the color bodies and 95% ofrganics are removed ;

d) monitoring and controlling the color , Chemical Oxygen Demand , and Total Organic Carbon removal efficiencies across the primary clarifier(s) by insertion of Continuous in-line Chemical Oxygen Demand Analyzer at outlet of primary clarifier(s) ;

e) separating the supernatant liquid layer from which the color bodies andorganics have been removed ;

f) removing the sludge from primaryclarifier(s) underflow , dewatering the sludge , incineration in existing bark power boilers or other incineration , regeneration and the recycle of a portion of recovered chemicals , and wasting of sludge up to approximately 20% to 35% depending on content of inert boiler ash in raw influent which consists of adding cationic , anionic or non-ionic polymers indewatering;

g) that supernatant liquid layer passes on to other final polishing/pH adjustment ,if needed , and since

Chemical Oxygen Demand , Total Organic Carbon , and Color removal efficiencies are exceedingly high , greater than 90% , no biological treatment is required and secondary biological treatment is eliminated;

9. A raw influent treatment process eliminating secondary biological treatment which comprises contacting raw influent containing lignins , lignin degradation productshumic acids , sulphates(ites) attached to ring structures , cellulose fibers , cooking chemicals and like from pulping , lime kiln , bleach plants including chlorine ,hypochlorite , caustic extraction , chlorine dioxide stagesgroundwood pulping ,thermomechanical pulping amd all like in combined raw influent sewer according to claim 1 , comprising :

a) removing all organics , color bodies and Chemical Oxygen Demand materials across primary clarifiers ;

b) removing organics , color bodies and Chemical Oxygen Demand materials across primaryclarifiers with in-line continuous pH controller adjusting to pH 5.7 to 6.0 ;

c) removing organics , color bodies and Chemical Oxygen Demand materials across primaryclarifiers results in 95% removal efficiencies for Chemical Oxygen Demand , Total Organic Carbon , and color bodies whereas existing actual data from Bowater and International Paper , Figure 2 , the wastewater goes through aeration biological systems unchanged in degradation of organics , Chemical Oxygen Demand materials ; whereas

d) that Bowater influent concentrations , outlet primaryclarifier concentrations , and outlet of aerated secondary biological aeration were the same (no change) at 795 milligrams per liter of Chemical Oxygen Demand , 368 milligrams per liter of Total Organic Carbon , and 2820 milligrams per liter of Color with no biodegradation and no biological oxidation across existing secondary aeration systems ; whereas

e) in existing Boise Southern , DeRidder , Louisiana , raw influent for which 280 raw influent samples treated as in and according to claim 1 , claim 2 , claim 3 , claim 4 and claim 5 resultant was 95% removal of BOD , COD , TOC , and Color ; whereas

f) in existing Boise Southern ,DeRidder , Louisiana , raw influent Biological Oxygen Demand of 235 milligrams per liter was immediately reduced by chemicals treatment to 40 milligrams per liter Biological Oxygen Demand and subsequent 95% organic reductions were achieved ;

g) furthermore in existing Boise Southern , DeRidder , Louisiana , raw influent if you can add reagent chemicals here and immediately get 90% Biochemical Oxygen Demand which is in what it takes you to obtain in 23 days retention time across the aerated stabilization basin , question of is there any biological degradation taking place ? ;

h) only that since pulping and paper operations results in configuring negative electrical charges on the lignins and other lignin ringed compounds , it is more than likely these electrical charges that are measured by the Biochemical Demand Test , the great fakery , fraud of the Biochemical Oxygen Demand

test ;

i) furthermore the Biochemical Oxygen Demand Test is defective and insertion of Continuous in-line Chemical Oxygen Demand Analyzer exiting primaryclarifiers is required ;

j) secondary biological oxygen treatment is eliminated as nobiodegradation takes place , no bugs are living degrading any organic bodies .

10. A raw influent treatment process eliminating secondary biological treatment which comprises contacting raw influent containing lignins , lignin degradation productshumic acids , sulphates(ites) attached to ring structures , cellulose fibers , cooking chemicals and like from pulping , lime kiln , bleach plants including chlorine ,hypochlorite , caustic extraction , chlorine dioxide stagesgroundwood pulping ,thermomechanical pulping amd all like in combined raw influent sewer according to claim 1 , comprising :

a) providing optimum removal efficiencies for chlorinated organics and Adsorbable Organic Halogens (AOX) ;

b) providing optimum removal efficiencies for dioxins , other chlorinated organics , other organics , and achieving average Total Organic Carbon concentration exiting primaryclarifiers less than 65 milligrams per liter ;